

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend the claims as follows:

Claim 1. (Currently Amended) An isolated mammalian epididymis-specific receptor protein ~~which has the polypeptide selected from the group consisting of~~
(a) a polypeptide encoded by a polynucleotide comprising the sequence of SEQ ID NO:1;
(b) a polypeptide having at least 90% sequence similarity to the amino acid sequence set forth in SEQ ID NO: 2 wherein said polypeptide is encoded by a polynucleotide which hybridizes to the complete complement of SEQ ID NO:1 under hybridization conditions comprising hybridizing in 5x Denhardt's solution, 4x SET (200 mM Tris (pH 8.0), 20 mM EDTA, 0.6 M NaCl), 0.1% sodium pyrophosphate and 25 mM sodium phosphate buffer (pH 7.0) for 72 hours at 65°C then washed in 0.1% SDS, 2x SSC (300 mM sodium chloride, 30 mM sodium₃ citrate) at a temperature of 65°C;
(c) a polypeptide comprising the amino acid sequence shown in SEQ ID NO: 2₁ ~~or a derivative of said protein or~~
(d) a fragment of said protein of (a)-(c), ~~said derivative or fragment having at least one biological activity and/or immunogenicity of said protein, wherein said derivative or fragment comprises at least ten contiguous amino acids of SEQ ID NO: 2₁~~
wherein each of the polypeptides of (a)-(d) is immunogenic, is intracellularly coupled to a G protein and has G-protein coupled receptor signal transduction activity.

Claim 2. (Currently Amended) A protein polypeptide of claim 1 wherein said polypeptide ~~derivative or fragment~~ comprises an amino acid sequence for the hydrophilic region of said receptor.

Claim 3. (Currently Amended) A ~~protein~~ polypeptide of claim 2 wherein said hydrophilic region ~~derivative or fragment~~ comprises an extracellular hydrophilic region domain of said receptor.

Claim 4. (Currently Amended) An isolated ~~protein~~ polypeptide having a polypeptide sequence selected from the group consisting of SEQ ID Nos NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

Claim 5. (Currently Amended) A ~~protein~~ polypeptide fragment of claim 1 wherein said ~~derivative or fragment~~ is comprises at least one polypeptide sequence selected from the group consisting of ~~any one of~~ SEQ ID NO: 3, ~~[-]~~ SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

Claim 6. (Withdrawn, Currently Amended) An isolated DNA sequence which codes for the receptor ~~protein~~ polypeptide or an ~~active derivative or fragment~~ thereof having the same biological activity and/or immunogenicity, according to claim 1.

Claim 7. (Withdrawn, Currently Amended) An isolated DNA sequence which codes for a ~~protein~~ polypeptide of claim 3.

Claim 8. (Withdrawn, Currently Amended) An isolated DNA sequence which codes for a ~~protein~~ polypeptide of claim 4.

Claim 9. (Withdrawn, Currently Amended) An isolated DNA sequence according to claim 6, chosen from

- a) the nucleotide sequence shown in SEQ ID NO: 1,
- b) the sequence of nucleotides 1 to 3,114 of SEQ ID NO: 1,
- c) a sequence homologous to the sequence represented by SEQ ID NO: 1 having a degree of homology of at least 70% and
- d) a syngenic or complementary sequence of a sequence according to a), b) or c), or a fragment thereof, where said sequence codes for a ~~protein or~~ polypeptide having the same biological activity and/or immunogenicity as said ~~protein or active derivative or fragment~~ polypeptide of claim 1.

Claim 10. (Withdrawn) A vector molecule, comprising at least one of the DNA sequence according to claim 2 as an insert, while maintaining the ability to replicate in a suitable host cell.

Claim 11. (Withdrawn) A vector molecule according to claim 10, wherein said DNA sequence is inserted in said vector, in a manner such that expression thereof can take place in a suitable host organism.

Claim 12. (Withdrawn) A prokaryotic or eukaryotic host cell transformed with a vector molecule according to claim 10.

Claim 13. (Withdrawn) A prokaryotic or eukaryotic host cell transformed with a vector molecule according to claim 11.

Claim 14. (Withdrawn, Currently Amended) A process for the preparation of an isolated mammalian epididymis-specific receptor ~~protein~~ polypeptide, which has an amino acid shown in SEQ ID NO: 2 or a derivative or fragment thereof having at least one biological activity and/or immunogenicity of said ~~protein~~ polypeptide, said process comprising culturing a host cell according to claim 12 in a culture batch under conditions which allow expression of the DNA sequence, and obtaining the expression product from the culture batch.

Claim 15. (Cancelled)

Claim 16. (Cancelled)

Claim 17. (Currently Amended) A pharmaceutical composition ~~which comprises a protein, derivative or fragment according to~~ comprising a polypeptide of claim 1 as an active component together with a pharmaceutically acceptable carrier or diluent.

Claim 18. (Cancelled)

Claim 19. (Withdrawn) A pharmaceutical composition which

comprises, as an active component, at least one nucleotide sequence which hybridizes with a nucleotide sequence according to claim 6.

Claim 20. (Withdrawn) A pharmaceutical composition according to claim 19, further comprising a detectable marker.

Claim 21. (Currently Amended) A composition comprising a ~~protein according to~~ polypeptide of claim 4 together with a pharmaceutically acceptable carrier or diluent.

Claim 22. (Currently Amended) A method of treating a male reproductive disorder or a contraceptive method for male mammals, said method comprising administering to a mammal in need thereof a pharmaceutical composition according to claim 17 ~~for treatment of male reproduction disorders or for contraception.~~

Claim 23. (Withdrawn, Currently Amended) A method of isolating a ligand specific for an epididymis-specific receptor comprising incubating the epididymis-specific receptor ~~protein~~ polypeptide of claim 1 with a substance suspected to be a ligand of said receptor and detecting binding of said receptor to said ligand.

Claim 24. (Withdrawn) A method according to claim 23 wherein said ligand is an agonist of said epididymis-specific receptor.

Claim 25. (Withdrawn) A method according claim 23 wherein said ligand is an antagonist of said epididymis-specific receptor.

Claim 26. (Withdrawn, Currently Amended) A method of treating infertility in a male mammal comprising administering an agonist of an epididymis-specific receptor ~~protein~~ polypeptide of claim 1 to said male mammal.

Claim 27. (Withdrawn, Currently Amended) A contraceptive method for male mammals comprising administering an antagonist of an epididymis-specific receptor to said male mammal wherein said antagonist comprises a ~~protein~~ polypeptide derivative or fragment of claim 1.

Claim 28. (Withdrawn) A method of treating infertility in a male mammal comprising administering an agonist of an epididymis-specific receptor of claim 1 to said male mammal.

Claim 29. (Withdrawn) A contraceptive method for male mammals comprising administering an antagonist of an epididymis-specific receptor of claim 1 to said male mammal.

Claim 30. (Withdrawn, Currently Amended) A method of diagnosing infertility in a male comprising measuring from said male to an epididymis-specific receptor protein polypeptide of claim 1.

Claims 31.–32. (Cancelled)

Claim 33. (Currently Amended) A protein polypeptide of claim 1 which has the immunogenicity of said mammalian epididymis-specific receptor ~~protein~~ polypeptide which has the amino acid sequence shown in SEQ ID NO: 2.